

JUL 05 2007

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE  
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES**

In the application of Patrick W. Kelley  
Serial No: 10/691,416  
Filed: 10/22/2003  
For: Plastic Logs

Art Unit: 1775  
Examiner: Timothy M. Speer

**Appeal Brief Transmittal and  
Request for Refund of Duplicate Fees**

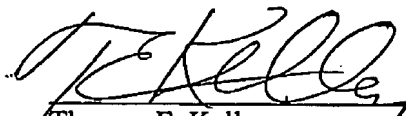
Mail Stop Appeal Brief-Patents  
Commissioner for Patents  
Via facsimile to  
Central Fax Number 571-273-8300

I hereby certify that the following documents in connection with an appeal in the above-identified application are being transmitted to the USPTO via facsimile on July 5, 2007:

Appeal Brief (13 pages)

Credit Card Payment Form (1 page)

Inasmuch as a fee for filing a brief in support of an appeal has already been paid in this application, the Commissioner is requested to not charge a second fee for filing a brief or, alternatively, to refund of the payment of duplicate fees to the address noted on the payment form.

  
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JUL 05 2007

Docket No: PWK-02-1-D

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**APPELLANT'S BRIEF**

Mail Stop Appeal Brief-Patents  
Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

Sir:

This is an appeal from the Final Rejection of claims 1 and 4-13 in the above-described patent application. Notice of Appeal in this application was filed with the Patent & Trademark Office on May 4, 2007, setting the two month period for filing the brief to expire on July 4, 2007. This Brief is timely filed with the USPTO on July 5, 2007.

**1. Real Party in Interest**

The real party in interest by assignment from the named-inventor is Sund & Gorman Company, a Pennsylvania corporation having a place of business in Saylorsburg, Pennsylvania.

**2. Related Appeals and Interferences**

The Appellant is unaware of any other Appeals or Interferences related to this Appeal.

**3. Status of Claims**

Claims 1 and 4-13 are pending. Claims 2 and 3 have been cancelled without prejudice and stand withdrawn from consideration. Claims 1 and 5 are independent. Claims 4 and 6-9 are dependent from claim 1. Claims 10-13 are dependent from claim 5. All the claims stand finally rejected under 35 USC 103(a). Appellant appeals all of the rejections of each of the claims.

**4. Status of Amendments**

Appellant understands that the amendment of claims 8 and 12 (to correct a typographical error) that was made with the Response filed on Sept 9, 2006 has been entered and is reflected in the Claims Appendix.

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## 5. Summary of Claimed Subject Matter

Plastic products for fencing and lumber are common real world architectural products, e.g. for yard privacy fencing and deck materials. Plastic products are also common in simulated and toy products, e.g. for toy log houses. Despite the ubiquity of "plastic logs" the subject matter of this invention is plastic logs that are building materials characterized by a novel combination of materials of construction, dimensions, and structural properties that make the plastic logs uniquely suitable for durable post and rail fencing applications, e.g. for corralling horses, an application previously demanding tougher materials of construction like natural wood. For instance, in claim 1 the logs are characterized by the novel combination of

- (a) having an average diameter greater than 2 inches,
- (b) having a flexural modulus at 40 °F of at least 70,000 psi,
- (c) having a diameter deviation in the range of 2 to 60%, and
- (d) comprising at least 80% thermoplastic materials comprising at least one polyolefin selected from the group consisting of polyethylene and polypropylene.

In another aspect of the invention the plastic logs of claim 1 are further characterized as comprising at least one other polymeric material having a melt temperature at least 20 °C. higher than the melt temperature of said polyolefin.

In claim 5 the plastic logs are alternatively characterized as

- (a) having deviations in diameter simulating a natural wood log
- (b) comprising at least 80% polypropylene and
- (c) having an average diameter greater than 2 inches,
- (d) having a flexural modulus at 40 °F of at least 90,000 psi and
- (e) having a diameter deviation defined by the algorithm  $((D-d)/D) \times 100$  in the range of 2 to 60%, where D is the maximum diameter and d is the minimum diameter.

Plastic logs for post and rail fencing applications are more particularly characterized by the limitations of claims 6-13. For instance claims 6 and 10 characterized logs having a length in the range of 5 to 7 feet; claims 8 and 12 characterize logs having a length in the range of 8 to 10 feet; and claims 7, 9, 11 and 13 characterize logs having an average diameter of not less than 3.5 inches.

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**6. Grounds of Rejection to be Reviewed on Appeal**

All of the appealed claims stand rejected under 35 USC 103(a) as being unpatentable over various combinations of US 5,253,458 (Christian), US 4,913,473 (Bonnema) and US 5,728,330 (Erwin).

**6.(a) First Ground of Rejection**

Claims 1 and 4-13 stand rejected under 35 USC 103(a) as being unpatentable over US 5,253,458 (Christian) in view of US 4,913,473 (Bonnema).

**6.(b) Second Ground of Rejection**

Claims 1 and 4-13 stand rejected under 35 USC 103(a) as being unpatentable over US 5,253,458 (Christian) in view of US 5,728,330 (Erwin).

**6.(c) Third Ground of Rejection**

Claims 1 and 4-13 stand rejected under 35 USC 103(a) as being unpatentable over US 5,728,330 (Erwin).

**7. Argument****7.(a) Table of Authorities**

Table of Authorities cited in the arguments against the three obviousness rejections:

*Graham v. John Deere*, 383 U.S. 1, 17-18, 148 USPQ 459, 467 (1966)

*KSR Int'l Co. v. Teleflex, Inc.*, 127 S.Ct 1727, 82 USPQ2d 1385 (2007)

*Alza Corporation v. Mylan Laboratories*, 464 F.3d 1286, 80 USPQ2d 1001 (Fed Cir, Sept 2006)

**7.(b) General argument on the Obviousness Rejections as applied to claims 1 and 4-13**

The issue is whether the subject matter of claims 1 and 4-13 would have been obviousness to a person of ordinary skill in the art from reading the primary reference alone or in combination with a cited secondary reference.

The law for determining obviousness, as set out in *Graham v. John Deere* and amplified by the Supreme Court in *KSR v. Teleflex*, requires four factual inquiries (a) determining the scope and content of the prior art, (b) ascertaining the difference between the prior art and the

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claims in issue, (c) resolving the level of skill in the art, and (d) evaluating evidence of secondary consideration.

The scope and content of the references is set out below together with the clear differences between each of the references and the claimed subject matter. In summary, the differences are that none of the references teach the claimed invention. And, none of the references teach or suggest modifying one of the other references in a way to supplement the deficiencies of the other references.

The KSR v. Teleflex decision did not totally reject the use of the teaching, suggestion, and motivation test as a factor in the obviousness analysis. More importantly, the KSR v. Teleflex decision did reinforce the requirement for explicitly establishing objective evidence of any general or common knowledge in the art that is would be brought to bear on the issue of obviousness.

#### **7.(b) Specific Argument on the First Obviousness Rejections**

The issue is whether the subject matter of claims 1 and 4-13 would have been obviousness to a person of ordinary skill in the art from reading Christian in view of Bonnema.

#### **The scope and content of the prior art**

The primary reference in rejecting claims 1 and 4-13 is US 5,253,458 (Christian) which is directed to a log and panel pre-fabricated house structure where the disclosed logs are various round or square tubular-shaped logs suitable for building a structure (obviously larger than a 2 inch diameter log use for a fence post or rail). Although the Christian logs may be precast with a "simulated log design to include knots, cracks and wood grain", the Christian logs have a substantially uniform surface dimension (diameter) over their length to allow stacking to form a wall (obviously not having a diameter deviations in the range of 2 to 60%). There is no indication that the simulated knots, cracks and wood grain are anything more than embossed features on an tube of uniform diameter. The Christian "logs" comprise sections of polyvinyl chloride (PVC) tubing filled with a hard cast foam and optionally reinforced with a steel beam (not at least 80% thermoplastic materials comprising at least one polyolefin selected from the group consisting of polyethylene and polypropylene). Christian is clearly teaching logs for building structures like log homes using a simulated log rather than a natural log. In a log

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home, the logs are stacked on one another and receive support from one another (with no explicit need for having a flexural modulus at 40 °F of at least 70,000 psi). There is no apparent requirement for a specific flexural modulus when Christian's logs are supported by and bolted to adjacent logs.

The secondary reference US 4,913,473 (Bonnema) discloses large diameter, double-walled plastic pipe with interlocking ends; see figures 1-7. The Bonnema pipe is flexible corrugated pipe. The Bonnema disclosure provides no suggestion for use of the corrugated pipe or its materials of construction in either simulated logs for building structures or in plastic logs of claim 1 for post and rail applications.

**level of skill in the art**

Appellant submits that the level of skill in the art of designing plastic logs is high, e.g. at least a PhD level in materials engineering or years of experience in plastics technology.

**ascertaining the difference between the prior art and the claims in issue**

As contrasted to the simulated logs disclosed by Christian the plastic logs of this invention are characterized in claim 1 by the novel combination of

- (a) having an average diameter greater than 2 inches,
- (b) having a flexural modulus at 40 °F of at least 70,000 psi ,
- (c) having a diameter deviation in the range of 2 to 60% , and
- (d) comprising at least 80% thermoplastic materials comprising at least one polyolefin selected from the group consisting of polyethylene and polypropylene. Christian does not disclose a log having diameter deviation in the range of 2 to 60%. Christian does not disclose a log comprising at least 80% thermoplastic materials comprising at least one polyolefin selected from the group consisting of polyethylene and polypropylene.

As contrasted to the flexible corrugated pipe disclosed by Bonnema which has no apparent properties that would make it suitable for use as a fence post or rail, the subject matter of claim 1 is characterized as having a flex modulus at 40 °F of at least 70,000 psi which makes it suitable for use as fence post or rail.

Appellant submits that the plastic log material described by the claims is not taught and would not be suggested to a person of ordinary skill in the art from a reading of either the

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primary reference (Christian) alone or in combination with the secondary reference (Bonnema) since the properties of the objects of the two references are not practically useful for fence posts or rails.

In making this rejection the Examiner has asserted that a diameter deviation is ornamentation only, serves no mechanical function and thus cannot distinguish over the prior art. Appellant disagrees. To a person of ordinary skill in the art the simulated ornamentation on the Christian pipe is mere ornamentation (an optical illusion) and the diameter deviation on the Bonnema pipe provides a function (flexibility and crush resistance). In the claims of this invention the diameter deviation is also a real limitation that is formed in the extrusion process of the plastic log and which serves to distinguish a "plastic log" with a "real" textured surface from a decorated "plastic pipe" with an embossed simulated surface. A natural log has diameter deviation; a plastic log of the invention has diameter deviation. A simulated log of Christian intended for building a structure like a log home does not have diameter deviation and does not suggest a log with diameter deviation. Appellant submits that a person of ordinary skill in the art, given a choice for fencing his yard with pipe having a simulated wood design or a plastic log with actual diameter deviations that provide the appearance of a natural log, would NOT choose the pipe with an embossed or printed design and would NOT say that the plastic log is an obvious variation over a pipe. It is true that pipe can be used for fencing, in fact it is a component of chain link fencing, but that does not mean that it is adopted for post and rail fencing or that it would suggest to a person of ordinary skill in the art the plastic logs of this invention that have special utility in post and rail fencing. The point is that the material disclosed by Christian would not serve as an obvious starting point for the claimed subject matter. There is no disclosure by Christina to suggest radical changes to arrive at the claimed subject matter.

The rejection suggests that a person of ordinary skill in the art would say that a plastic pipe with simulated design for use in log buildings are functionally equivalent to plastic logs of this invention because the function of a fence post is mostly to serve as a visual barrier, e.g. a function that even string could provide. If a person of ordinary skill in the art were urged to elect the foam-filled PVC pipe of Christian with simulated wood design as a fencing material, appellant submits that it would be rejected because that person of ordinary skill would say "it doesn't work", i.e. it doesn't function as a fence, and there would be no motivation to effect

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changes to make it function as a fence. A piece of 2x4 spruce framing timber would be more suitable. In short, appellant submits that diameter deviation as used in claim 1 do serve a function in that it defines a plastic log.

Moreover, the selection of materials is critical to performance of the plastic logs of this invention and there is no motivation in Bonnema that suggests that polypropylene or polyethylene would provide better performance in a plastic log of Christian for use in fencing. There is no disclosure in Bonnema to a person of ordinary skill in the art that teaches or suggests that polypropylene or polyethylene would be superior to PVC in plastic logs of Christian and in such a way to provide a motivation to adapt such a change of materials of construction in a monolithic plastic log that is structurally different from the foam-filled log of Christian. Such disclosure and motivation are missing from Bonnema and Christian and any proposal that they are suggested clearly rests on the impermissible use of hindsight. See *Alza Corporation v. Mylan Laboratories* where the Court of Appeals for the Federal Circuit, a tribunal charged with the judicial supervision of the Patent and Trademark Office, emphasized the requirement for adherence to the *Graham* factors and avoidance of hindsight and resistance to the temptation to read into the prior art the teachings of the invention in issue. Yet, the Examiner argues that it would have been obvious to a person of ordinary skill in the art at the time of the invention to substitute polyethylene or polypropylene thermoplastic that are disclosed in Bonnema for the PVC used in the simulated log taught by Christian

“since the reference specifically teaches that polypropylene or polyethylene may be substituted for PVC as a suitable material for making plastic pipes and because the Christian reference discloses that such plastic pipes are used to make the simulated logs”.  
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Such substitutions require a consideration of the intended use which is missing from both Christian and Bonnema.

Appellant also traverses the Examiner's suggestion that Christian discloses materials with the same properties as required by the plastic log. Appellant directs the Board's attention to Exhibit 1 of applicant's Communication to the PTO on October 15, 2004 (attached hereto as Evidence appendix) showing the mechanical properties of PVC as used by Christian. For example, PVC has a flexural modulus of 10,000 psi where the claims require a flexural modulus of at least 70,000 psi (claim 1) or (0,000 psi (claim 5). Christian does not disclose that the properties of PVC are deficient for any application. There is no indication in the art of record



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that it would have been obvious to a person of ordinary skill in the art from the disclosure of Christian to make a plastic log with real diameter deviations and substitute the polypropylene or polyethylene for PVD.

Appellant further submits that neither Christian nor Bonnema, whether alone or in combination, teaches or suggests the plastic logs characterized by either of independent claims 1 or 5. More particularly, Appellant submits that a *prima facie* case of obviousness has not been made for the following reasons:

- 1) Christian does not teach or suggest plastic logs with a diameter deviation limitations of either claim 1 or claim 5;
- 2) Christian does not teach or suggest plastic logs comprising the materials of construction limitations of either claim 1 or claim 5;
- 3) there is no motivation or suggestion to combine the cited references; and
- 4) Christian and Bonnema are in non-analogous arts and do not seek to solve the same problem as Appellant.

#### **evaluating evidence of secondary consideration**

Appellant submits there is a dearth of patent applications on plastic logs, e.g. for post and rail fencing, because of the difficulties in achieving a balance of properties from structure and materials that provides a useful plastic log. If it were so obvious there would be a greater range of art available to a person of ordinary skill in the art.

#### **7.(c) Specific Argument on the Second Obviousness Rejections**

The issue is whether the subject matter of claims 1 and 4-13 would have been obviousness to a person of ordinary skill in the art from reading Christian in view of Erwin.

Erwin fails to supplement the deficiencies of Christian in failing to teach or suggest the plastic logs of claims 1 or 5. What Erwin discloses is a process for manufacturing foam-filled extruded products, e.g. the foam-filled plastic pipe of Christian which is referenced at column 1, line 30 of Erwin. Erwin does not teach any of the characteristics of plastic logs. At best Erwin discloses that polyethylene or polypropylene can be among many of the thermoplastic polymers used in the shell over the foam core of the structure. Erwin does not suggest that the extruded article could be provided with diameter deviations according or that the extruded article could be

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at least 80% of polyolefin. There is simply no teaching or suggestion in Erwin to lead a person of ordinary skill in the art to the claimed subject matter.

**7.(c) Specific Argument on the Third Obviousness Rejections**

The issue is whether the subject matter of claims 1 and 4-13 would have been obviousness to a person of ordinary skill in the art from reading Erwin.

As stated above Erwin discloses a process for manufacturing foam-filled extruded products, e.g. the foam-filled plastic pipe of Christian. Erwin does not teach any of the characteristics of plastic logs. There is simply no teaching or suggestion in Erwin to lead a person of ordinary skill in the art to the claimed subject matter.

**8. Claims appendix**

Appended hereto is a copy of the claims to be reviewed on appeal.

**9. Evidence appendix**

Attached is Exhibit 1 to applicant's communication to the USPTO of October 15, 2005 which comprises a table showing the mechanical properties of vinyl polymer (PVC).

**10. Related Proceedings appendix**

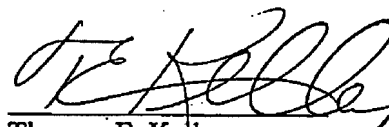
There is no related proceedings appendix.

**11. Certificate of Service**

There is no certificate of service

In view of the foregoing arguments, it is respectfully requested that the Board of Patent Appeals and Interferences reverse all of the final rejections of the appealed claims 1 and 4-13

Respectfully submitted,



Thomas E. Kelley  
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Attorney for Appellant  
Phone: 860-572-5274

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**Claims Appendix**

1. A plastic log having an average diameter greater than 2 inches, a flexural modulus at 40 °F of at least 70,000 psi and a diameter deviation in the range of 2 to 60% wherein said log comprises at least 80% thermoplastic materials comprising at least one polyolefin selected from the group consisting of polyethylene and polypropylene.
- 4 A plastic log of claim 1 further comprising at least one other polymeric material having a melt temperature at least 20 °C higher than the melt temperature of said polyolefin.
- 5 A plastic log having deviations in diameter simulating a natural wood log comprising at least 80% polypropylene and having an average diameter greater than 2 inches, a flexural modulus at 40 °F of at least 90,000 psi and a diameter deviation defined by the algorithm  $((D-d)/D) \times 100$  in the range of 2 to 60%, where D is the maximum diameter and d is the minimum diameter.
- 6 A plastic log of claim 1 having a length in the range of 5 to 7 feet.
- 7 A plastic log of claim 6 having an average diameter not less than 3.5 inches.
- 8 A plastic log of claim 1 having a length in the range of 8 to 10 feet.
- 9 A plastic log of claim 8 having an average diameter not less than 3.5 inches.
- 10 A plastic log of claim 5 having a length in the range of 5 to 7 feet.
- 11 A plastic log of claim 10 having an average diameter not less than 3.5 inches.
- 12 A plastic log of claim 5 having a length in the range of 8 to 10 feet.
- 13 A plastic log of claim 12 having an average diameter not less than 3.5 inches.

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**Evidence Appendix**

Attached is a data sheet that was submitted to the USPTO as Exhibit 1 to an amendment filed in October 2004 providing evidence of the mechanical properties of commercial rigid vinyl polymer which has a flexural modulus of 10 ksi (10,000 psi).

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## Exhibit 1

## MatWeb.com, The Online Materials Database

## PolyOne Geon® 87350 Vinyl Compound - Rigid (RPVC)

Subcategory: Polymer; Thermoplastic; Vinyl

## Material Notes:

## Description/Features:

- Exterior-Weatherable
- UL 94 V0
- UL 94 5VA

## Applications:

- General Purpose

## Processing Method:

- Extrusion-Sheet

PolyOne First Choice

**Disclaimer:** Note: The Cell Classification was determined using the notched Izod test with injection molded samples.

Information provided by PolyOne Corporation.

Physical Properties	Metric	English	Comments
Specific Gravity	1.44 g/cc	0.052 lb/in <sup>3</sup>	ASTM D792
<b>Mechanical Properties</b>			
Hardness, Shore D	82.2	82.2	15 sec; ASTM D2240
Tensile Strength, Yield	43.4 MPa	6290 psi	Type 1 - Rigids, 0.2 in/min; ASTM D638
Tensile Modulus	2.48 GPa	360 ksi	Type 1 - Rigids, 0.2 in/min; ASTM D638
Flexural Modulus	0.0689 GPa	10 ksi	ASTM D790
Flexural Strength	2450 MPa	355000 psi	ASTM D790
Dart Drop, Total Energy	0.12 ft-lb/mil	0.12 ft-lb/mil	Procedure A, 0.125 in Conical Dart, 73°F (23°C); ASTM D4226
Dart Drop, Total Energy	0.24 ft-lb/mil	0.24 ft-lb/mil	Procedure B, 0.125 in Conical Dart, 73°F (23°C); ASTM

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			D4226
Izod Impact, Notched	6.3 J/cm	11.8 ft-lb/in	Method A, Injection Molded, 0.125 in bars, 73°F (23°C); ASTM D256
Izod Impact, Notched	7.21 J/cm	13.5 ft-lb/in	Method A, With Grain - Comp. Molded, 0.125 in bars, 73°F (23°C); ASTM D256
Izod Impact, Notched	8.76 J/cm	16.4 ft-lb/in	Method A, Against Grain - Comp. Molded, 0.125 in bars, 73°F (23°C); ASTM D256

**Thermal Properties**

CTE, linear 68°F	72.9 $\mu\text{m/m}\cdot^\circ\text{C}$	40.5 $\mu\text{in/in}\cdot^\circ\text{F}$	ASTM D696
Deflection Temperature at 1.8 MPa (264 psi)	67.8 °C	154 °F	Unannealed, 0.125 in bars; ASTM D648
Flammability, UL94	V-0	V-0	All Colors; 0.035 in.
Flammability, UL94	V-0	V-0	5VA, All Colors; 0.118 in.

**Processing Properties**

Melt Temperature	188 - 204 °C	370 - 400 °F	Extrusion
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**Descriptive Properties**

Cell Classification D1784	15343	ASTM D1784
Cell Classification D4216	14133223	ASTM D4216

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